METHOD AND SYSTEM FOR TIMING RECOVERY AND DELAY SPREAD ESTIMATION IN A COMMUNICATION SYSTEM

5   ABSTRACT OF THE DISCLOSURE

A timing recovery scheme demarcates a complete range of inter-symbol interference free (ISI-free) sampling positions available in a cyclically extended symbol. The timing recovery scheme computes an

10   ensemble correlation between the cyclic extension and the data part of symbols to estimate timing. The ensemble correlation function retains delay-spread and timing information by separately maintaining the correlation value for each sample position within the symbol duration and combines the correlation values for identical sample positions over an

15   ensemble of symbols. In this manner, the scheme not only provides timing estimates, but can also provide estimates of the multipath delay-spread in a channel. The delay-spread estimates provide valuable information about the nature of the channel. A receiver can use this information, for example, to adjust the frequency-domain channel interpolation filter

20   bandwidth in order to improve performance for the given channel condition.